

Physical vs Chemical Changes:

Physical:

1. Physical properties are any obs. that can be made WITHOUT changing the composition of matter.

a. Examples:

- color
- texture
- density
- odor
- solubility
- electrical and thermal properties
- ductility (ability to roll into long strands)
- malleability (ability to change shape)
- brittleness
- State change properties

2. Physical changes are a change in any physical property.

a. The identity of the element or compound does NOT change

b. Do NOT make or break bonds

3. Examples include:

- a. Any change in state
(boil/freeze/melt/evaporate)
 - i) Rubbing alcohol evaporate in your hand
 - ii) A juice box freezing in freezer
 - iii) Butter melting on toast
- b. Any change in shape or size
 - i) Aluminum foil cut in half
 - ii) Clay molded into a new shape
 - iii) Chewing your food

4. Signs of a Physical Change

- a. Any change in phase
- b. Change in the energy of particles
- c. What you start with stays the same chemically.

Chemical:

1. Chemical properties are any observations that are dependent on changing the chemical composition of the object.

a. Examples:

- Flammability
- Ability to oxidize
- Ability to react with acid
- Ability to react to water

2. Chemical changes: The substances that are present at the beginning of the reaction are changed to something new.

a. You break bonds or you make bonds!

b. The change cannot be undone.

3. Examples include:

- a. Gasoline is ignited/burns
- b. Car rusting
- c. Milk goes sour
- d. Bread becomes toast
- e. Hydrogen peroxide bubbles in a cut
- f. Food digesting in stomach and intestines

4. Signs of a chemical change:

- a. Bubbles appear
- b. Burning something
- c. A precipitate forms
- d. A color change
- e. The temperature changes
- f. There is a different smell